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09/954,751	09/18/2001	Yeun-Jong Chou	55814US004	8875

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EXAMINER

RACHUBA, MAURINA T

ART UNIT PAPER NUMBER

3723

DATE MAILED: 11/03/2004

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CHOU 3700

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/954,751
Filing Date: September 18, 2001
Appellant(s): CHOU ET AL.

Richard Francis
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 29, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1 and 3-13 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,679,067

JOHNSON et al

10/1997

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 3-13 are rejected under 35 U.S.C. 103. This rejection is set forth in a prior Office Action, mailed on October 21, 2003.

(11) Response to Argument

The examiner will address appellants arguments based on the issues, and will address appellant's second issue before the first.

2. *Does the combination of Johnson et al, 5,679,067 and Barber, Jr. et al, 5,518,794 teach the claimed invention as defined by Appellants' claims 1 and 3-13 under 35 USC 103(a)?*

Johnson, in the abstract, disclose a molded abrasive brush having a backing with a plurality of bristles extending therefrom. The backing and bristles are preferably integrally molded. The brush is molded from a moldable polymer such a thermoset polymer, thermoplastic polymer, or thermoplastic elastomer. The moldable polymer includes a plurality of organic or inorganic abrasive particles interspersed throughout at least the bristles, and can be interspersed throughout the brush. The moldable brush can include an attaching means molded integrally with the backing. The abrasive is either aluminum oxide, diamond, cubic boron nitride, glass beads, glass bubbles, garnet, or silicon carbide (column 12, lines 34-46). The bristles are made of polyamide or polyester (column 9, lines 39-column 10, lines 13. Johnson further discloses that the

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brush can be made without abrasive (column 17, line 54). Johnson disclose that the abrasive is molded throughout the bristle structure, and not adhered to the surface of the bristle. Barber, figure 4, teaches, in a unitary (unitary is defined as Having the nature of a unit; whole¹) brush, but not a brush with hub and bristles molded from the same mass of material, providing each bristle with an adhesive coating (column 10 lines 60-column 11, lines 11), an abrasive coating (column 11, lines 60-column 12, lines 7), and a second adhesive coating (column 23, lines 57-59), the first coating comprising polyurethane (column 10, lines 60-column 11, lines 11), the abrasive comprising for example, silicon carbide, cubic boron nitride, garnet or diamond (column 11, lines 60-column 12, lines 7), the second coating is plastic, considered an adhesive in this product (column 23, lines 57-59). It would have been obvious to one of ordinary skill to have provided Johnson with the first and second coating of adhesive and abrasive coating, as taught by Barber, column 1, lines 39- 47, to prevent the bristles from taking a set shape, softening and losing its effectiveness. Barber provides further motivation in column 2, lines 5-47:

In all abrasive filled polymeric filaments, as the degree of abrasive loading increases, the tensile strength and flex fatigue resistance tend to decrease, due to insufficient binding of abrasive and polymer. Bending modulus for a filament can be simply defined as the resistance to bending. This is an inherent characteristic of the polymer used for the abrasive filament. Bending modulus is generally independent of the filament

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diameter, and since the bending modulus of a family of abrasive filaments made from the same polymer will be the same, the main characteristics which affect filament stiffness are the diameter and length of the filament.

The abrasive cutting ability of abrasive-filled nylon filaments exhibits the distinct characteristic of cutting relatively well at the onset of the operation, followed by clear loss of abrasive action within about 1 hour. FIG. 7 shows the degradation in cutting ability of abrasive-filled nylon filaments, filled with a typical aluminum oxide abrasive, when the filaments are attached to a hub to form a brush and the hub rotated so that the filaments strike (and therefore abrade) a stationary workpiece. FIG. 7 represents the cut obtained on a flat carbon steel (1018) plate as a function of time at a constant load of 1.36 Kg. Equipment is typically designed to reverse the brush operation to restore the abrasive action to its original level of activity. An abrupt increase in cut can be achieved if the brush is "dressed" for example, by operating the brush against a wire screen. This is shown at 2 hours 15 minutes in FIG. 7. Another problem associated with abrasive-filled nylon filaments is their poor flex fatigue resistance. Over extended periods of operation the filaments tend to break near the point of attachment to the hub, an inconvenience to the user, resulting in decreased life and economic value of the brush.

The present invention addresses some of the problems mentioned above with abrasive-filled nylon and other filaments by presenting a composite abrasive filament comprising a preformed core coated with an abrasive-filled thermoplastic elastomer. This approach centers on the idea that a preformed core coated with an abrasive sheath has a higher initial bending modulus, a more constant bending modulus as a function of time, temperature, humidity and chemical environment, and higher tensile strength than an abrasive-filled thermoplastic filament.

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It is clear from the teaching of Barber that coating a pre-formed filament with abrasive and adhesive coatings results in a stronger brush, with a longer useful life.

Appellant has argued that the use of this teaching is impermissible hindsight. The examiner strongly disagrees. MPEP 2123 states in part:

Applicants may argue that the examiner's conclusion of obviousness is based on improper hindsight reasoning. However, "[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." In re McLaughlin 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

Here, Barber expressly and most definitely provides the motivation to one of ordinary skill in the art: that applying a coating of abrasive to a pre-formed bristle provides a stronger, more effective, and longer lasting abrasive tool than bristles with abrasive distributed throughout the material of the bristle. That the examiner relies on such clear teaching cannot be considered impermissible hindsight.

Appellant further argues that there is no suggestion in Johnson to coat the bristles, and no suggestion in Barber to form the bristles and body of the same mass of material. The examiner agrees that neither Johnson or Barber anticipate appellant's invention. MPEP 2143 states in part:

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of

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ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

In this instance, there is motivation to provide Johnson with coated abrasive, rather than abrasive distributed throughout the bristle, as clearly taught by Barber. There is a reasonable expectation of success, in that Johnson teaches molding the bristles and body of the same mass of material, and Barber teaches coating molded filaments (bristles). One of ordinary skill would expect to be successful in coating bristles molded with a body from the same mass of material, based on the teachings of Barber to coat molded bristles. And as set forth in the rejection, the combined references teach all the claim limitations.

Appellant, throughout the brief, argues that the method of making the abrasive brush of Johnson is different than the method of making the abrasive brush of Barber, and therefore the products must be different. Appellant further argues that such methods of making are incompatible, and therefore the teachings of Johnson and Barber cannot be properly combined. The examiner strongly disagrees. The combination of Johnson and Barber teach all the *product* claim limitations. That applicant has a different method of making that product bears little patentable weight against the combined teachings. Johnson teaches that an abrasive brush with bristles and body molded from the same mass of material is old and well known. Barber teaches molded bristles coated with abrasive are old

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and well known, and provides reasoning as to why such coated abrasive makes a stronger brush than one with abrasive molded throughout the bristle. The combined teachings of Johnson and Barber produce the same brush claimed by appellant.

1. *Would one skilled in the art combine the teaching of Johnson, et al. 5,679,067 (Johnson) with that of Barber, Jr., et al. 5,518,794 (Barber) under 35 USC 103(a)?*

Appellant argues one of ordinary skill would not combine the teaching of Barber and Johnson to arrive at the claimed invention. Appellant argues that "Barber's, invention deals with formed filament cores that are coated with molten thermoplastic elastomer (TPE) which contains abrasive particles to provide abrasive coated filaments. The abrasive particles may be applied to a coating of the TPE coated core by projecting abrasive grains toward the TPE-coated pre-formed core but that is not Barber's preferred method of making the coated pre-formed core filaments. See for example, column 22, lines 7-14".

Barber, columns 21, lines 64 through columns 23, lines 67, discloses several different processes for applying an abrasive coating to the filaments. That one process may be preferred over others is not on point. MPEP 2123 states in part:

Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been

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described as somewhat inferior to some other product for the same use.”

In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994).

In this instance, Barber clearly *discloses* that several different coating processes may be used to coat the filaments. That one may be preferred over others does not negate the teaching relied on by the examiner.

Appellant also argues that the examiner relies on impermissible hindsight for motivation to combine the teachings of Johnson and Barber. Please refer to the response above, and the teachings of Barber. It is the examiner's position that it cannot be impermissible hindsight if the combined references teach the claimed product, and explicitly provide the motivation for combining the teachings.

Appellant further states that “neither of the isolates references suggests the need or desirability of the combination proposed by the Examiner”. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

It is the examiner's position that the product as claimed is obvious over the combined teachings of Johnson and Barber, under 35 USC 103(a).

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,



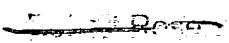

M Rachuba
Primary Examiner
Art Unit 3723

October 27, 2004

Conferees:

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 not available for sign. 

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